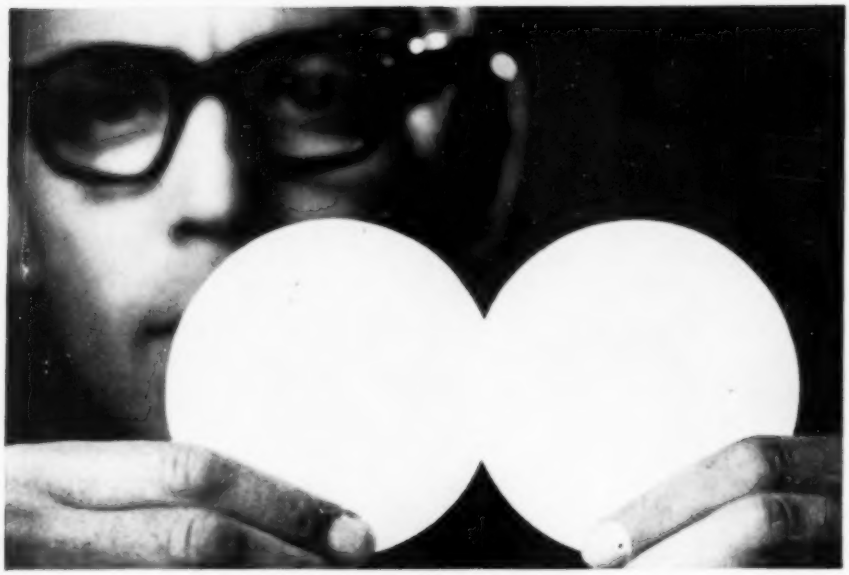
October, 1958

THE CHEMIST

VOLUME XXXV NUMBER 10

T. H. HOPPER (center) receives Honor Scroll of the Louisiana AIC Chapter from DR. C. H. FISHER (right) CARROLL L. HOFFPAUIR is on the left.

(*See Page* 444).



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Deadlines for *The Chemist*

The Deadline for the December issue of The Chemist is November 10th. Advertising copy for December should be received not later than November 15th.

THE AMERICAN INSTITUTE OF CHEMISTS does not necessarily endorse any of the facts or opinions advanced in articles which appear in THE CHEMIST.

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TO COME IN NOVEMBER

William Ernest Fairbanks of Thomas J. Lipton, Inc., Hoboken, N. J., presented a paper at a joint meeting of the New York AIC Chapter and the N. Y. Section of the A.C.S., which considered the "troublesome problems of a chemist's rights and obligations vis-a-vis his employer." It may well excite comment. • The International Geophysical Year ends in December, 1958. Hugh Odishaw, executive director of the U. S. National Committee, IGY, will tell us what the chemist is doing in this program and what functions will be continued. His paper was presented at the 35th AIC Annual Meeting. • Dr. C. L. Brown, Esso Research & Engineering Co., who received the Honor Scroll of the New Jersey AIC Chapter, will be the subject of the human interest story.

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EDITORIAL

Public Relations — to Accelerate Our Objectives

HOW to influence what the public thinks about chemists and chemical engineers is quite in line with our AIC Objective No. 6:

> Seek to improve the economic status of the professions by cooperating with employers and the public to secure a satisfactory appreciation and evaluation for the services of the chemist and chemical engineer.

For many years, the AIC has been exceedingly modest about its accomplishments and activities. This is a commendable attitude. It would seem that the organization that is hard at work has no real need for self-praise, which can be time-consuming and even diverting. However, our coin of seeming virtue also has its obverse side, which, as a result of not enough understanding, can be blurred and indistinct.

The Council found this out through a survey of members' attitudes toward the AIC made by the Ohio Chapter, and through discussions held by the Professional Advisory Committee of the New Jersey Chapter. These sources revealed that some of our members did not know what the AIC Objectives are; did not know how to obtain personal help from the various sources of assistance provided by AIC Committees; did not believe that an organization could accomplish great things without large financial resources, because they did not realize that the volunteer work provided by committees and individuals is truly invaluable, and that an idea planted in the right place sometimes is more effective than a financed project.

After pondering these things, the Council appointed a "Committee to Implement AIC Objectives" and assigned to it the task of studying ways to speed up our effective work. This Committee reported at the June meeting of the Council. Its first recommendation was that we needed a strong public relations program, which, it said, "is basic to the growth and progress of our Institute."

As a result, President Ott appointed a Public Relations Committee, headed by Richard L. Moore of W. R. Grace & Co., 3 Hanover Square, New York 4, N. Y. The other committee members are: Dr. Emmett B. Carmichael, professor of biochemistry, chairman of the department, Medical College, University of Alabama, Birmingham 3, Ala.; Dr. Lloyd A. Hall, technical director, The Griffith Labs., Inc., 1415-31 W. 37th St., Chicago 9, Ill., and Dr. Kenneth W. Newman, chief process engineer, Turco Products, Inc., 6135 So. Central Ave., Los Angeles, Calif.

This committee, in order to carry out sound public relations activities, needs the cooperation of every AIC member. Tell the Committee members what you are doing by way of public relations. Tell them what you want to know about the AIC. Tell them what areas of activities are in need of more understanding. While these things are of an internal nature, they are most important to unified effectiveness. Any ideas that you may have for an external public relations program will be welcomed by the Committee.

SPECIAL AIC ANNOUNCEMENTS

Volunteers Wanted for Committee on Legislation

The Chairman of the Committee on Legislation affecting Chemists and Chemical Engineers is Maynard J. Pro, who announces that the members of this Committee are:

Richard M. Fullaway
Dr. David M. Gans
Bernard E. Schaar
Arthur H. Shaffer
J. D. Smith

The Washington Chapter Committee on Legislation, of which Dr. A. P. Mathers is Chairman, is working with the National Committee. Members of the Washington Chapter Committee are:

Albert F. Parks
Paul E. Reichardt
Dr. Carl J. Wessel

In addition, Advisory Associates for the states are being appointed to keep the Committee informed of state and local legislation. The following states and group of states are represented by:

Minnesota—Dr. Joseph F. Abere
North Carolina, South Carolina, Georgia—Mrs. Elizabeth F. Myers
Florida, Mississippi, Alabama, Texas, Louisiana, Oklahoma—J. D. Smith
New Jersey—Dr. Albert Bloom
Virginia—Rodney C. Berry
New York—Dr. Ernest I. Becker
Illinois, Michigan, Indiana, Wisconsin—Arthur H. Shaffer
Puerto Rico—W. Llorens

The Committee requests volunteer Advisory Associates to report for the following states or group of states: Arkansas, Iowa, Kansas, Nebraska, Missouri, South Dakota, North Dakota; Maryland, Delaware; Connecticut, Rhode Island, Massachusetts, Vermont, New Hampshire, Maine; California, Nevada, Arizona, New Mexico, Utah, Colorado; Washington, Oregon, Idaho, Montana, Wyoming; Pennsylvania; Ohio; West Virginia, Tennessee, Kentucky.

AIC Members who are in a position to be familiar with proposed legislation in one or more of the above states may volunteer their services to Maynard J. Pro, 4414 Franklin Street, Kensington, Maryland.

(Information about the current activities of the Committee will be found on page 459.)

Bernard Friedman To Be Honored

Dr. Bernard S. Friedman, F.A.I.C., will receive the Honor Scroll Award of the Chicago AIC Chapter at a testimonial dinner to be held October 8th at the Furniture Club, in Chicago, Ill. Albert S. Henick, chairman of the Chapter, states that Dr. Friedman, who is research associate for Sinclair Research Labs., Inc., Harvey, Ill., was selected for his "devoted service in promoting the profession of chemists; and his civic leadership and scientific accomplishments."

Dr. Ott on European Trip

Dr. Emil Ott, AIC president, left August 29th for a business trip to Europe. He participated in the 31st International Congress of Industrial Chemistry, in Liege, Belgium, September 7-18, and was chairman of the program committee for the American Section Day of the Societe de Chimie Industrielle on September 9th. He expects to return October 6.

Potential AIC Chapters

It is good news that petitions for the formation of several new AIC Chapters will be presented to the National Council on October 14th. Among these are petitions from AIC members in Delaware, Georgia, and the Midwest for Chapters in those areas.

AIC Delegates

Dr. Harry L. Fisher, Hon. AIC, will serve as AIC delegate to the inauguration of Norman Hawkins Topping as seventh president of the University of Southern California, on October 23rd, at Los Angeles, Calif.

Dr. Henry B. Hass, F.A.I.C., has been appointed AIC delegate to the inauguration of Richard Gilman Folsom as twelfth president of Rensselaer Polytechnic Institute, on October 4th, at Troy, N. Y.

Will You Come

Oct. 8, 1958. Chicago Chapter. Testimonial Dinner. Furniture Club, Chicago, Ill. Cocktails at 6. Dinner at 7. Honor Scroll presentation to Dr. Bernard S. Friedman, research associate, Sinclair Research Labs., Inc., Harvey, Ill. AIC President Ott will present the Scroll. For reservations: Donna Rockrohr, Telephone In 8-9300, Ext. 277.

Oct. 9, 1958. New England Chapter. Joint meeting with the Northeastern Section of the American Chemical Society. M.I.T., Cambridge, Mass. Dr. W. George Parks, Hon. AIC, is presiding over the afternoon symposium on professional interests and responsibilities of chemists. AIC President Ott will speak in the evening on "Professional Obligations of Chemists." For information: Dr. Albert E. Frost, Jr., Dow Chemical Co., Eastern Research Lab., Framingham, Mass.

Oct. 14, 1958. AIC Board of Directors and Council. Dinner and meeting. Board meets at 5:30 p.m., Council at 6:00 p.m. The Chemists' Club, 52 E. 41st St., New York 17, N. Y.

Oct. 20, 1958. New Jersey Chapter. Dinner 6:00 p.m., The Chatham, Summit, N. J. Meeting jointly with Lackawanna Sub-Section, of the North Jersey Section, American Chemical Society, at the Celanese Corp. of America, Summit, N. J., at 8:00 p.m. Subject, "How Professional Societies Affect the Life of the

Chemist." Speakers include Dr. Henry B. Hass, recent AIC president, and president of the Sugar Research Foundation, New York, N. Y., and Dr. Bradford R. Stanerson, director, National ACS Membership Affairs. All interested are invited. For reservations and details: Dr. J. F. Mahoney, Merck & Co., Inc., Rahway, N. J. (FU 8-1200, Ext. 3254).

Oct. 24, 1958. Potential Georgia Chapter. Charter Day Dinner, Atlanta Athletic Club, Atlanta, Ga. Election of Officers. Presentation of Charter by AIC President, Emil Ott. For information, Angus J. Shingler, The Coca-Cola Co., P.O. Drawer 1734, Atlanta 1, Georgia.

Nov. 8, 1958. Pennsylvania Chapter. Engineers' Club, Philadelphia, Pa. Dr. William A. Mosher, Head, Chemistry Department, University of Delaware, Newark, Del. will give a summary of his impressions of "The Chemical Profession in the Satellite Countries." Dinner: 7 p.m. Contact Dr. William A. Langeland, Wyeth Labs., Radnor, Pa.

Nov. 20, 1958. New York Chapter Meeting. Bogert Room, The Chemists' Club, 52 E. 41st St., New York, N. Y. Social Hour 5:30 p.m. Dinner 6:30 p.m. Address 7:30 p.m. Speaker: Marlin G. Geiger, executive vice president, W. R. Grace & Co. Subject: "Achieving Success on the Job—Exploiting our Abilities." (To be discussed: Learning our technical and personality traits. Fitting them to the job. What is expected of the chemist in research, marketing, etc. Working with superiors . . . equals . . . subordinates. Professional attitudes) Reservations (Dinner $4.90. No charge for those attending address only), Robert R. Dean, Westvaco Chlor-Alkali Div., 161 E. 42nd St., New York 17, N. Y. (MU 7-7400).

Jan. 8, 1959. New York Chapter. Honorary Membership Meeting. Hotel Shelburne, 37th St. and Lexington Ave., New York, N. Y. Social Hour 5:30 p.m. Dinner 6:30 p.m. Program 7:30 p.m. Honorary Membership Recipient, Dr. Foster D. Snell, president, Foster D. Snell, Inc., New York, N. Y. Speaking for Dr. Snell as a person: Dr. Donald B. Keyes. Speaking for Dr. Snell as a chemist: Cyril S. Kimball, executive vice president, Foster D. Snell, Inc. Presentation of Honorary Membership: Dr. Emil Ott, AIC president. Acceptance Address: "The Independent Consultant and Independent Laboratory as a Professional Activity." Reservations (Dinner $6.25 in advance; $7.00 at the door), Robert R. Dean, Westvaco Chlor-Alkali Div., 161 E. 42nd St., New York 17, N. Y. (MU 7-7400).

Feb. 6, 1959. New York Chapter. Joint meeting with New York Section of the American Chemical Society. Place and time to be announced. Speaker, Wallace R. Brode, scientific advisor to the Department of State. Subject: "Government Policy. Why the Chemist Should Contribute." (To be discussed: Professional responsibility of the chemist. Need for the scientific approach. How he can contribute to local, state, and federal policy. Benefits to the chemist . . . to commerce . . . to society.)

Apr. 16, 1959. New York Chapter Meeting. Bogert Room, The Chemists' Club, 52 E. 41st St., New York, N. Y. Social Hour 5:30 p.m. Dinner 6:30 p.m. Address 7:30 p.m. Speaker: Earl Ubell, Science editor, *New York Herald Tribune*. Subject: "Community Recognition —How the Chemist Can Achieve It." (To be discussed: Professional responsibility of the successful chemist. Public relations techniques for obtaining recognition. Working with editors . . . with others who contribute to the chemist's recognition. Benefits to the chemist . . . to the profession . . . to society) Reservations (Dinner $4.90. No charge to those attending address only), Robert R. Dean, Westvaco Chlor-Alkali Div., 161 E. 42nd St., New York 17, N.Y. (MU 7-7400).

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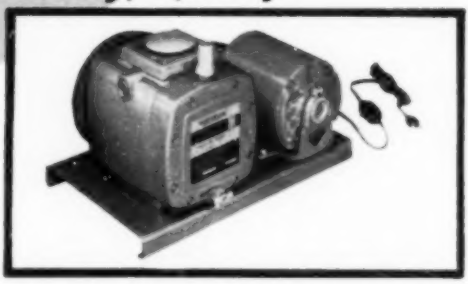

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On Professionalization of Chemists

T. H. Hopper, F.A.I.C.

Chief, Industrial Crops Lab., Southern Utilization Research & Development Div., USDA, 1100 Robert E. Lee Blvd., New Orleans 19, La.

(Response of the author when he was presented the Honor Scroll of the Louisiana AIC Chapter, April 28, 1958, at New Orleans, La.)

MUCH is written in the popular press about chemistry and the part it plays in our everyday living. The contribution of chemistry to the production and maintenance of quality of everything we use and consume is constantly being demonstrated. However, comparatively little is said, outside chemical journals, about the chemist as a personality or as a professional individual.

A number of factors appear to retard the recognition of a chemist as a professional individual along side of doctors, dentists, engineers, and others. The chemist is generally an employee. Management is rather impersonal with respect to chemical research accomplishments. There are no generally recognized standards of qualifications for chemists other than those specified by the Civil Service Commission and the membership requirements of the AIC. Specializations in chemistry are so diverse that some are more closely associated with disciplines other than in the area of chemistry. In many instances, management hires chemists and disguises their scientific identity under a variety of titles and places them in more close association with workers in other sciences, with the result that they lose or do not achieve recognition as chemists.

For chemists to obtain remuneration by way of salary, in the past and to a large measure at present, it has been necessary for them to take administrative positions. It is encouraging to note that three large corporations, among others, have set up plans that give professional scientists and engineers opportunities for technical staff progression equivalent to opportunities on the administrative side. It is planned, in these cases, that if a professional person shows particular aptitude for technical work, including research, he will be encouraged to become highly specialized and to advance in the particular area.

The AIC is the only domestic organization dedicated to the development of professional status for chemists and chemical engineers. Its growth has been slow but steady, though not as rapid as the importance of the profession and professional recognition warrants. It is striving to overcome the opposing factors mentioned earlier. Another problem is that of getting chemists and chemical engineers to think and act as professionals in their relations with each other and with the general public.

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The development of a mutual respect and recognition of the work and accomplishment of all, in all phases of chemistry, should help attain recognized professional status for all qualified individuals. In this connection some recognized concept, written or unwritten, of when interne or apprenticeship ends and full professional standing begins, would be in order. This can be achieved by the performance of the members of the chemical specializations involved. To live up to the full responsibilities of professional status requires keeping abreast of the current chemical literature by individuals in their fields of specialization, and developing a broad perspective through constant study throughout the years of professional life.

While in the suggestion mood, I offer two more ideas which may be helpful. Some journals have carried a series of articles on "contemporaries." This activity could be extended to publication of popularly written articles on contemporaries in nontechnical publications, giving personal information about chemists and chemical engineers and their achievements. The other idea is to establish a Hall of Fame for Chemists and Chemical Engineers to give further recognition to those who have contributed outstandingly to the science of chemistry, and to the chemical industry. It is postulated that a critical review of the accomplishments of chemists will reveal a surprising number of worthy candidates, dating back to the early days of the nation.

The future security, health and economy of the Nation depends on an increase in the number of professional personnel in all classifications, in proportion to the growth of the industry and the population, with variations determined by automation and other factors contributing to efficiency in the use of manpower.

Senior scientific personnel have a real responsibility and opportunity to give incentive and direction to students and junior scientists. One of the greatest satisfactions I have had has been the casual, informal contact with such students, which has successfully redirected or guided their future as scientists and men. In some instances the contact has been so casual that it was not recognized until afterwards.

Presentation of Honor Scroll to Hopper

WHEN T. H. Hopper, chief of the Industrial Crops Laboratory, Southern Utilization Research & Development Division, USDA, New Orleans, La., received the Honor Scroll of the Louisiana Chapter, at a dinner in New Orleans, April 28, 1958, Dr. C. H. Fisher, director

of the Division, spoke about Mr. Hopper's achievements:

Mr. Hopper came to the Southern Laboratory in July 1942, to serve as head of the Analytical, Physical-Chemical and Physics Section, where he served until January, 1958, when he was appointed chief of the newly-formed Industrial Crops Laboratory. Work done under his guidance has been widely accepted, such as the analytical methods for determining free and total gossypol in cottonseed materials; oil, moisture and free fatty acids in castor beans and pomace, and moisture in peanuts, adopted as standard methods by the American Oil Chemists' Society; a method of determining starch in plants adopted by the Association of Official Agricultural Chemists, and an extensive test standardization and validation program, under the auspices of the American Society for Testing Materials, which has contributed material to the standardization and wide acceptance of the instrumental testing of cotton. Mr. Hopper has also taken the lead in research which has isolated and identified key constituents in cotton fiber, cottonseed, and peanuts, and many other research projects producing developments valuable to science and industry.

Mr. Hopper has been active also in professional organizations. He is past president of the American Oil Chemists' Society, editor of the *Official and Tentative Methods of Analysis*, chairman of the Seed and Meal Analysis Committee, and other offices. He is a member of the Committee on Fats and Oils of the Division of Chemistry and Chemical Technology of the National Research Council; a member of the Fats and Oils Commission of the International Union of Pure and Applied Chemistry, and a member of Committee D13, Textiles, of the American Society for Testing Materials.

In addition to other honors, the U. S. Department of Agriculture gave him the Superior Service Award in 1956, in recognition of his scientific ability and inspiring leadership.

Mr. Hopper has devoted his entire career to agricultural research. He has worked at the North Dakota Experiment Station, Fargo, N. Dak., and at the U. S. Soybean Laboratory, Urbana, Ill., of which he was director when he left in 1942 to join the staff of the Southern Regional Research Laboratory in New Orleans.

Following Dr. Fisher's talk, Dr. Carroll L. Hoffpauir, then chairman of the Louisiana Chapter, presented the Honor Scroll to Mr. Hopper, who responded with remarks on the "Professionalization of Chemists." (See preceding pages.)

At this same meeting, Dr. Winston R. de Monsabert of Loyola University, chairman of the Louisiana Chapter's Committee on Student Medals, presented medals to the following outstanding students: Miss Virginia E.

Meyer from Louisiana State University; Timothy Calamari from Loyola University, and Edward H. Steger from Tulane University.

The citation to Mr. Hopper reads:

For leadership in promoting the growth and recognition of the chemical profession.

About AIC Members

Dr. W. George Parks, Hon. AIC, is president and director of American Research & Testing Laboratories, Inc., a new consulting organization, specializing in textile problems, at Pawtucket, Rhode Island. Dr. Parks, who is head of the department of chemistry of the University of Rhode Island, is also director of the Gordon Research Conferences of the AAAS.

Dr. James B. Allison, F.A.I.C., director, Bureau of Biological Research, Rutgers University, New Brunswick, N. J. will speak on "Amino Acid Requirements of Laboratory Animals Including Dogs," at the meeting of the Animal Nutrition Research Council at the Shoreham Hotel, Washington, D. C., Oct. 15th.

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Hillary Robinette, Jr., F.A.I.C., president of Robinette Research Laboratories, Inc., Ardmore, Pa., announces that Eugene J. Wollschlager, recently returned from a tour of duty with the U. S. Army in Western Germany, has assumed the position of administrative assistant to the president.

Gene A. Zerlaut, A.A.I.C., chief of the Coatings Unit, Structures & Mechanics Lab., Army Ballistic Missile Agency, Redstone Arsenal, Alabama, recently received the Army Commendation Ribbon for significant contributions made in the area of coatings for Army missiles and satellites. The award was presented by Brig. Gen. J. A. Barclay, commander of the ABMA.

Bjorn Andersen, F.A.I.C., vice president and general manager, Plastics Division, Celanese Corp. of America, New York 16, N. Y., announces that a new Marketing Department has been formed by the Plastics Division.

(*Continued on page* 455)

Motion Pictures as a Tool for Teaching Chemistry

True Boardman

Vice President, John Sutherland Productions, Inc., Los Angeles, Calif.

(Condensation of a paper presented at the 35th Annual AIC Meeting in Los Angeles, Calif., April 11, 1958.)

SINCE the production in 1953 of the film, "A Is for Atom," General Electric reports that this film has received over 45,000 individual showings, to an estimated audience of 4,800,000. Eighty-five per cent of these showings were to high schools and colleges. This single film has provided a basic introduction to nuclear fission to approximately 4,000,000 students in the U.S.

A shortened version of the film was released theatrically, and in various film competitions in this country and abroad, it won nineteen awards, including The Golden Reel Award, the Freedom Foundations' Award, the Turin and Venice Film Festival Awards and the Scholastic Teacher Award. This is evidence of the extent of the demand for films on science within our educational system today. Beyond all doubt, the need for additional films will grow greater in the years to come.

The basic problem which faces our educational system is familiar. The inevitable aftermath of the historical tendency for Eros to walk hand-in-hand with Mars is a crop of war-babies now in our grammar schools, soon to descend in an inquisitive hoard on high school and college. Arthur Howe, dean of admissions of Yale, has estimated that from a present college enrollment of three and one-quarter million, the number will rise to between five and eight million within the next dozen years.

What can the educational film do to solve this problem? Does it provide the miraculous answer to the unanswerable? Rather, it is one of the possible answers which can make a considerable contribution. Is this the presumption of film producers inclined to be biased in favor of their own medium of information? Actually, the evidences are impressive. Although there have been no nation-wide or state-wide surveys on film programs, individual researches made by the armed forces and academic groups are most revealing.

The Human Factors Operation Research Laboratories of the Air Force Research and Development Command at Bolling Field in Washington made extensive tests of the relative effectiveness of teaching the same subject material by means of a 30-minute lecture and a 15-minute film. It was found that the test group of Air Force recruits learned 28% more

from the film than a control group learned from a lecture. Two months later, when the same groups were tested to discover how much instruction had been retained, those whose instruction had been confined to the 15-minute film retained 42% more of the instruction than those who had been taught with the 30-minute lecture.

In a survey conducted at Pennsylvania State University, Dr. Aaron Vandermeer took four ninth-grade classes in general science and treated them as though there were no teachers available. In film catalogs, he found 44 motion pictures which covered the ground; during one entire term the children did nothing but look at these motion pictures. Yet they did significantly better on their examinations than the classes studying the same subject in the traditional manner. In a surprise test sprung three months later, the film study group did 34% better than the regular classes.

In another test made in Nebraska, it was found that high school science classes devoting one-sixth of their instructional time to an enrichment program with motion pictures made significantly better scores than non-film classes, on informational tests directly related to the content of the films; and equal scores on national standardized tests.

In a survey in Minnesota, three researchers compared the teaching of high school biology by four different methods: (A) With the traditional text book and a minimum of laboratory work. (B) With 18 appropriate films to supplement the text materials and with no laboratory experience. (C) Using laboratory experiences, such as dissection and examination of specimens, but with no films. (D) Using films, plus the laboratory methods. As measured by the Minnesota State Board of Examinations in Biology, the students in Group D, which combined film and laboratory experience, achieved significantly more factual information than those in the other three groups.

A summary of the results from the various tests may be best expressed by Dr. May of the Department of Psychology, Yale University, who has said,

> "Every one of the numerous surveys made since the war by educators and psychologists demonstrates the educational value of audio visual tools, and when examinations were repeated after a lapse of time, the superiority of pupils taught with films was even more marked than before."

There are other reports which could be included, and the results are impressive, but for the most part, these investigations have been based on the extreme situation in which films are used, not as aids to the teacher, but as substitutes for the teacher, and beyond all doubt, such use is not the answer. The teacher, with his personal knowledge of the subject, his relationship with his stu-

dents, and his direct understanding of their individual needs and learning skills is, and must remain, the key factor in the learning process of chemistry . . . as of literature . . . as of the social sciences. However, in 1958, when it is possible for the teacher to have the tools of teaching which are part of the age, what sense does it make for him to be restricted to book, blackboard, and chalk?

Let us consider what a motion picture, skillfully conceived and artfully executed, can do for a teacher of chemistry. It can allow him to show his students experiments which it is impractical for him to perform for many reasons—lack of complicated equipment, or of rare or expensive chemicals; or danger surrounding the particular experiments, as work with nitroglycerine, T.N.T. or the perchlorates. On the other hand, consider the value of film in making it possible for him to show the class such things as the phenomena of near-zero degree Kelvin chemistry, virus and enzyme studies, the function of platinum as a catalyst, sonic chemistry, the operations of the ultra centrifuge, the production and use of radioisotopes, electron microscopy, etc.

Furthermore, a film can describe the otherwise indescribable, and visualize the unseen. Consider the problem of clarifying to the high school sophomore the difference between the chlorine atom and the chloride ion. In a brief animation sequence (which we recently produced for a current production) the process of a sodium atom stealing away an electron from a chlorine atom, thereby producing a chloride ion, can be graphically illustrated.

A film can alter size. Few high schools are equipped with an electron microscope. But a film sequence concerning the structure of molecules can graphically portray them in various stages of magnification up to that produced by an electron microscope.

A film can juxtapose events never seen together. It can, through the use of animation, give the effect of seeing through solid obstacles and inside processes. It can alter speed to the level of comprehension, and in a process such as an explosion, where normally only effect is visible, we can, through motion picture techniques, show the actual moment of chemical change.

Another factor is the ability of films to immediately orient chemical processes within the school laboratory to the application of those processes in industry. The teacher may produce chlorine gas within the classroom, and by means of films, the students may have the personal experience of seeing the process being carried out on an industrial scale in a chlorine producing plant.

In the learning process, the student is transported from ignorance of a subject to a state of relative under-

standing, and there are catalytic agents involved in that process. Most important of these is the teacher. Also important are the physical experiments the student performs, and the information contained in the text book. To these catalysts, may be added a powerful one in the form of motion pictures. But it is imperative that the films be so designed as to complement and integrate with the teaching techniques and curriculum of the teacher himself.

The ultimate answer to the complete effectiveness of the educational film lies in the closest cooperation between those who face the problems of interpreting knowledge to students, and those whose business it is to devise the most skillful methods of imaginative communication of the complex, the abstract, and the difficult to comprehend.

The science text books of today have not, as Mr. Powell described it, "rounded the curve of time." Many need drastic revision in form, text, selection and handling of illustrations, indexing, bibliography. Too many books of today are written on the pattern of teaching technique of not only pre-1945 (which Mr. Powell mentioned as the sudden corner in the curve of time), but pre-1900. Textbooks should be revised. But should that revision not be part of an overall revision of the entire teaching program—the laboratory experiments, the outline of lecture material and visual aids, with principal accent on films?

If only as an experimental basis for purposes of testing, would it not be wise for some educational group to try to develop a fully integrated teaching program of high school chemistry—not an assembled job with a book from here, a wall chart from there, and a film from somewhere else—but a complete, planned program in which each part complements and strengthens the other part. This implies a streamlined modernization of the teaching process. Such a program could communicate more information, faster, and with a higher degree of retention by the student. Such a program, involving a re-evaluation and re-integration of all teaching procedures, while a long-range ideal, is just as certainly not a short-range expectation.

More realistically, we can look to films as important auxiliaries to present curricula, functioning according to their own effectiveness; whether the teacher be good, bad, or indifferent—but not as well. The best combination will always be good film, plus good teacher. But the combination of good film plus poor, or tired, or distracted, or undertrained, teacher is a great improvement over that teacher alone.

There is one obstacle which stands in the way of wider acceptance of films as visual aids in science—cost. Good films are not cheap to make, to

distribute, or to exhibit. In addition to the price of the original production, there is the buying of prints, distributing those prints, providing projectors for their use within the individual schools.

Some interesting analyses have been made on savings which the use of audio-visual materials can make, insofar as the time of both teachers and students is concerned. Dr. Bruce Findlay, associate superintendent of the Los Angeles Schools, has provided statistics showing what it would mean financially to the school system if, by the use of visual aids, a teacher could save one hour out of every week. Figuring the teacher's pay at the national average of approximately $6 an hour, the teacher would, in a school year, have saved 36 hours or $216.00. That represents a significant percentage of a teacher's salary for a school year. There is no consideration here of depriving the teacher of that $216.00, but rather to release him for that additional hour, under his present salary, so that he may have more time for personal attention to students or for some of the many duties which make up his crowded schedule. Let us add the time saved by students through more rapid learning, which films promote, and though it is difficult to assess this in terms of money, there is abundant evidence to show that the extensive use of films in the education system could well prove to be one of the most economically sound investments in education we have ever made.

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Last year, it was estimated that our educational systems paid approximately $10-million for films and other visual aids. (In the same period, Coca-Cola spent $11-million to exalt the benefits of "the pause that refreshes!") It would be ideal if over night all of the school systems were to agree to reorganize their individual curricula into a pattern as new as tomorrow, which would incorporate all that is new in teaching procedures with educational films as foundation stones of the structure. That will not happen. But this we do know, if a film is made on a subject of broad educational interest with sufficient skill (and with consideration of the specific problems of the classroom teacher), that film will find its way into a significantly large proportion of the classrooms.

Two current film projects represent a proper practical approach to the problem. These two teaching films, which we produced for the

Manufacturing Chemists' Association, are now being reviewed in work-print stage by members of the educational committee in New York City. One of these 15-minute films is on "Combustion," the other on "Chlorine," both designed for classroom use. Technically they have been produced with all the skill we could command, even to being photographed by Winton Hoch, an Academy Award winning cameraman. However, in the determination of subject matter and the sequence of its presentation, we worked in close collaboration with chemistry teaching experts. Assigned to the project by the MCA was Dr. Elbert Weaver, F.A.I.C., currently on sabbatical leave from the Chemistry Department of Phillips-Andover, and functioning as education advisor to the MCA.

These will also be tested with chemistry teachers and students before being distributed. In other words, the partnership between the scientists and teachers and ourselves as film producers, is being carried on all the way down the line. Our second current project involves two films on chemistry for use at the college level. They have been developed through the storyboard stage under the aegis of the Alfred P. Sloan Foundation, in cooperation with the National Science Foundation and the Education Committee of the American Chemical Society, under the chairmanship of Dr. Joel Hildebrand, Hon. AIC, University of California. One of these films concerns "molecular vibrations" and its script development has been under the supervision of Dr. Linus Pauling and members of his staff at the California Institute of Technology, including Drs. Badger, Schumaker, and Ewing. The second film, dealing with the "Activated Complex" has been prepared with the cooperation of Dr. Henry Eyring at the University of Utah.

There is another area of possible collaboration between your skills and ours. THE AMERICAN INSTITUTE OF CHEMISTS is concerned with the problem of increasing the awareness of people concerning the importance, not so much of chemistry, but of chemists themselves. The importance of such a task in these perilous days cannot be exaggerated. We face in many quarters disdain for the egghead—be he practitioner of the profession of literature, politics, or science. That fact has been stated many times in these Post Sputnik days. In too many

cases the expression of public attitude toward the intellectual varies from scorn to a somewhat amused acceptance. Obviously such an attitude is ridiculous when the fact is that humanity may hinge upon who first discovers a particular solid fuel.

Why not a motivational series of educational films, for high school, even junior high school, level, which would dramatize the contributions which men of science have made to the world? The teenager is rare who is not fully aware of the page written in American history by Wyatt Earp, Cochise, Jim Bowie, and a Los Angeles police sergeant name Joe Friday. How many have any remote concept of the contributions to the entire world made by Lavoisier, Rutherford, Boyle, the Curies, Fermi, and Seaborg . . . ? Such a series could capture some of the drama and genuine achievement of the truly inspired scientific career. It could perform a vital role in the orientation of young Americans toward science as a career.

Surely in our concern over Russian advances in technical education, we need increased stimulus to attract our own young men and women toward the sciences . . . Why not sell science as a career? To accomplish that, it needs only that we find the way to communicate the truth—which is that tomorrow is the day of the scientific men.

Motion pictures have a vital role to play in meeting the educational challenge of the years ahead. But this task must be one of collaboration. You are the men whose job it is to seek and to discover the mysteries of our physical world and how and why it changes as it does. Insofar as the truth of substance may be said to exist, you create that truth. The laws are laws because you and your predecessors gave them words. There are among you the teachers whose task it is to pass those truths on to students, to give them the tools to build a better world, and to seek and find more of those tools for themselves. In that task, we of the film industry can be of help. You are the "knowers," we are the "communicators." Working together with genuine respect for the gifts each of us can bring to the final task, there are no limits to what we may achieve.

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The Criterion

"The criterion for successful management of scientists and of scientific efforts is to understand them. Happy is the company whose chief executives are respected by those in the ranks. Twice happy is the company whose scientists and engineers feel that their boss is genuinely interested in what they are doing and how they do it, is striving to understand and to participate effectively in arriving at joint judgments where there is not the slightest sign of anything but real collaboration between professional men in adjacent fields, each respecting the special knowledge of the others, and each hence willing to give and take in an endeavor which requires for its success the contribution of all."

—Dr. Vannever Bush,
Chairman of the Board,
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Scientists in Science Fiction

"Dr. Walter Hirsch, writing in *American Journal of Sociology*, summarizes the attitude toward scientists appearing in works of science fiction between 1926 and 1950, an interval covering periods of both prosperity and depression. During the first, or prosperity period, the proportion of scientists who were heroes was 44%, but only 24% during the postwar period. Throughout the entire period, scientists were the most frequent villains, except during wartime, when they were replaced by businessmen... In the imaginary societies often invented by science fiction writers, scientists figure in general as the legitimate elite, although there are recurrent conventional themes, such as the 'Frankenstein,' 'Scientist as Savior,' and 'Scientist as Martyr' approaches. And interestingly enough, there is a decreasing dependence, in science fiction, on natural science as a means for the solution of problems, with more and more being left to outside intervention—often to chance."

—*Industrial Bulletin*
(No. 355)
Arthur D. Little, Inc.

Public Apathy

"There is an apparent lack of realization and determination on the part of our citizens to advance progress in education and in science. Although the facts have received much publicity ... these do not at present appear truly to be national objectives, as understood by the people ... The responsibility of the people is to give these problems their careful attention and to determine ... the degree to which they can contribute by thought, action, and money to our national goals as well as to the satisfaction of their personal needs and desires."

—Alan T. Waterman, Director
National Science Foundation

The Chemical Market Research Association will hold its fall meeting Nov. 12-13, at the St. Paul Hotel, St. Paul, Minn.

Dr. William H. Armistead, F.A.I.C., vice president and director of research and development, Corning Glass Works, Corning, N. Y., announces the appointment of three new department managers: Dr. Ben Allen as director of melting technology; Dr. Charles A. Bradley, Jr., as manager of melting research, and Robert C. Cleveland as manager of Pilot Plant 1.

Dr. Foster D. Snell, F.A.I.C., president of Foster D. Snell, Inc., 29 W. 15th St., New York 11, N.Y., consultants, announces that his firm and Robert S. First, industrial consultant, have organized a joint project to bring scientific discoveries in Europe to the attention of American industry. "European Processes and Product Technology" is open on a subscription basis.

Dr. Eugene McCauliff, F.A.I.C., vice president in charge of sales and development of the former Glyco Products Co., will retain this position with the newly-formed Glyco Chemicals Corp., at Williamsport, Pa. Glyco Products was acquired by Chas. L. Huisking & Co., and the name of the new subsidiary was then changed to Glyco Chemicals Corp.

Joseph K. Roberts, F.A.I.C., of Standard Oil Co. (Indiana), Chicago 80, Ill., has been assigned to engage in studies connected with the company's activities in the foreign field.

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Harry Bennett, F.A.I.C., and **E. Rosendahl,** F.A.I.C., have sold their interests in Glyco Products Co., Inc., New York 1, N. Y., which will be continued under the name of Glyco Chemicals Corp. Mr. Bennett left on September fifth with members of the Society of Cosmetic Chemists to visit plants and laboratories in Italy, Germany, Denmark, Holland and Belgium.

Dr. E. M. Kipp, F.A.I.C., research director, Foote Mineral Co., Philadelphia 44, Pa., announces that Dr. Walter L. Borkowski has been named assistant manager of chemical research.

(Other items about AIC Members are on pages 458, 459, 460 and 463.)

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Communications

On Confidential Relationship

To the Editor:

With respect to the letter under heading "On Confidential Relationship" (page 393, August 1958 CHEMIST), the rather broad conclusion is stated (based on the United Shoe Machinery Case) that "Hence prosecuting patent applications as stated in the United Shoe Machinery case is not legal work." One must carefully guard against too broad an interpretation out of context.

In the very recent case of Ellis-Foster Co. et al *v.* Union Carbide & Carbon Corp. C. A. 217-57 (U.S.D.C., N. J.) Judge Meaney reviewed the law on this subject and in an opinion filed March 20, 1958, expressed a very sound view on the question saying *inter alia*:

> "I find myself unable to agree with the implied contention that because an attorney happens to be engaged in the field of patents in which fields non-attorneys are authorized to practice, he is *ipso facto* deprived of his status as a lawyer in every activity in which he operates so long as a patent prosecution is involved."

The excellent opinion of Judge Meaney is worthy of wide acceptance to bring the practice to the status it should occupy.

Perhaps it would appear that the privilege heretofore enjoyed by corporation house counsel may be narrowed.

—Sol Shappirio, F.A.I.C.
Washington, D. C.

Unexpected Discovery

To the Editor:

Bernard Schaar certainly did us all a great service by analyzing the sophistry in applying the silly word, *serendipity*, to scientific discoveries (CHEMIST, XXXV: 411-418).

It would be too bad if any reader became discouraged at that bumpy spot on page 412 where the continuity was wrecked. As a former occupant of your chair, I know only too well how "just one of those things" can happen, so I withhold the jeer or jibe. As, also, a puzzle-addict who especially enjoys unscrambling jumbled linotype, I offer a constructive suggestion: Simply transpose the last three lines of the first column and the first three lines of the second column, and thenceforward all goes smoothly!

This investigation of *serendip'ty* was long overdue. Not the least valuable bit of Mr. Schaar's delightful scholarly dissertation on a perfectly asinine story is his tactful exposition of the way some writers of dictionaries try to disguise their literary pilfering by their elaborate paraphrasing and gratuitous improving of the texts of others.

Because readers and writers in science must perforce adopt many new words to express expanding needs, we should be grateful to Mr. Schaar for exposing this literary mongrel in its true light. Let's all help to fulfill his wish that the use of serendipity to ex-

plain scientific discoveries will be lessened—or better, abandoned. Even the few well-chosen examples cited are sufficient to show that most discoveries—expected or not—should more properly be attributed to that other much abused word, *genius*, which has been best defined as " . . . the infinite capacity for taking pains."

—Florence E. Wall, F.A.I.C.
New York, N. Y.

The Most Surprised People

To the Editor:

We should all feel indebted to Mr. Schaar for his very interesting paper on Serendipity (THE CHEMIST, 35, 411-418, [1958]). I must take issue, however, with a statement made at the bottom of the first column of p. 414 in which he says, "Aside from Joseph Priestly, (1733-1804), who was always 'surprised' at what he discovered 'by chance,' few scientists have ever had more than one such incident in their lives."

Ever since some Justice of the Supreme Court promulgated the "flash of genius" doctrine with respect to patents, the chemists in this country have been the most continuously surprised group of people you ever came across. Very frequently, the same chemist is somehow able to maintain his state of surprise through a whole series of patents with consecutive numbers. One gets the impression that the common attitude of research workers is that of open-mouthed wonder at the miraculousness of it all!

—Dr. Paul P. McClellan, F.A.I.C.
Houston, Texas

The Best I Have Read

To the Editor:

The article on "The Scientific Manpower Problem," published in the September 1958 issue of THE CHEMIST is the best one I have read among the voluminous literature on this prominent subject. As so often before, Dr. Eisenschiml knew how to put the problems of our profession into effective language. . . . May I submit the suggestion to distribute copies of Dr. Eisenschiml's address to our legislators and other individuals who can contribute to implement Dr. Eisenschiml's ideas into action?

—Dr. Fritz Rosenthal, F.A.I.C.
Watertown, N. Y.

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John K. Honish, F.A.I.C., has been appointed as market analyst in the Market Research Department of Bakelite Co., Division of Union Carbide Corp., New York, N. Y.

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Dr. Lloyd A. Hall, F.A.I.C., was elected, for a three-year term, as a councilor-at-large for the Institute of Food Technologists, at the recent Annual Convention held in Chicago.

Dr. Murray Berdick, F.A.I.C., coordinator of Research, Evans Research & Development Corporation, New York 17, N. Y., participated in the National Conference on the Administration of Research, held in Estes Park, Colorado, under the sponsorship of the University of Denver, September 10-12.

Report of the AIC Committee on Legislation Affecting Chemists and Chemical Engineers

Senate Bill 3126, Science and Technology Act of 1958, was proposed to create a department of science and technology; (to create standing committees on science and technology in the Congress); to establish National Institutes of scientific research; to authorize a program of Federal Loans and loan insurance for college or university education in the physical or biological sciences, mathematics, or engineering; to authorize the establishment of scientific programs outside of the United States and for other purposes.

The Washington Chapter, AIC, Committee on Legislation approves this Bill, in principle, and expressed its opinion to Walter L. Reynolds, staff director, Committee on Government Operations, U. S. Senate. This letter became a matter of record in "Hearings before the Subcommittee of the Committee on Government Operations, U. S. Senate, 85th Congress, second session on S. 3126," page 284.

Early in June, amendment S. 734 to the Federal Employees Salary Increase Act of 1958 required that scientists, advanced to the top of their grade by Civil Service Commission action, be returned to their original classification step before calculating their salary adjustment. The Washington Chapter Committee, as well as several engineering and chemical societies, made their opinions known to the Congress; the bill was returned for further study in conference, and amendment S. 734 was deleted.

At present the Committee is formulating plans to study and point out to the Congress the inequities in the classification of scientific personnel. It will support in principle the separate classification of scientists.

—Maynard J. Pro, Chairman

Dr. E. J. Crane, director of The Chemical Abstracts Service and editor of *Chemical Abstracts,* retires in November after 47 years with this American Chemical Society publication. The ACS honored him at a banquet held September 10th during its national meeting in Chicago, Ill. **Dr. Clifford F. Rassweiler,** F.A.I.C., president of the ACS, spoke on Dr. Crane's achievements. **Dr. Arthur C. Cope,** F.A.I.C., head, Chemistry Department, Massachusets Institute of Technology, presented Dr. Crane with many testimonial letters. **Alden H. Emery,** F.A.I.C., executive secretary of the ACS, was toastmaster.

Dr. George Denton Beal retired as director of research at Mellon Institute on Aug. 31st, after 32 years.

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Technologists—wide variety of specialized fields. Write for Announcement No. 158—Technologist, U. S. Civil Service Commission, Washington 25, D. C.

Chemists for openings in New England in the Air Force, or with the Army and Navy. Apply to Regional Director, First U. S. Civil Service Region, Post Office, Boston 9, Mass.

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Dr. S. M. Martin, F.A.I.C., vice president, Thiokol Chemical Corp., Trenton, N. J., expects total sales of the Chemical Division to amount to $9,500,000 for 1958, an increase of 30% over the total for 1957.

Dr. John E. McKeen, Hon. AIC, president, Chas. Pfizer & Co., Inc., Brooklyn, N. Y. emphatically denies charges made against Pfizer by the Federal Trade Commission in a complaint against six antibiotics companies.

Dr. Milton C. Whitaker, Hon. AIC, retired, was honorary chairman of the American Chemical Society banquet, September 9th, celebrating the Golden Jubilees of *Industrial & Engineering Chemistry* and five ACS divisions.

For Your Library

The Chemistry of Natural and Synthetic Rubbers

By Harry L. Fisher, Hon. AIC. Reinhold Publishing Corp. 1957. 208 *pp.* 6¼ x 9¼". $6.50.

Recipient of numerous awards and the author of over 50 patents in the rubber field, Dr. Fisher has made valuable contributions to both industrial research and development and to the training of future chemists and chemical engineers. His book is an authoritative summary of the way chemists have made natural rubber serve an ever-increasing number of industrial purposes and have produced, at the same time, synthetic "elastomers" (the word is his own) capable of even more diversified applications. References follow each chapter and there are author and subject indices, as well. Here is a book which should be in every chemical library.

—Dr. Frederick A. Hessel, F.A.I.C.

Chemical Process Economics

By John Happel, F.A.I.C. XII—291 pp. 6x9½". John Wiley & Sons, Inc. $8.50

Prof. Happel has developed an important contribution to the working tools of chemical engineers and the chemical industry. He has done this while providing a text book for his own classes at New York University, and thus the book not only gives methods useful to the profession but at the same time it shows how these were developed. Primarily the purpose is to enable the reader to choose between alternatives by evaluating economic factors in process terms. Its methods are directed to solving process problems rather than cost accounting. It is a good book and well written.

—D. H. Killeffer, F.A.I.C.

Polysaccharides in Biology

Transactions of the Second Conference, April 1956. *G. F. Springer, Editor. Josiah Macy, Jr. Foundation. N. Y.* 1957. 245 *pp.* 6½x9½". $5.00.

This volume contains the transactions of the conference on polysaccharides in biology sponsored by the Josiah Macy, Jr. Foundation. Discussed are sialic acid and related compounds; interaction of polysaccharides and viruses; pyrogens and endotoxins. The discussions are quite informal having a give and take atmosphere. The material with its questions, criticisms and comments, is very instructive. The book is illustrated and has a well-selected bibliography. It is highly recommended to those interested in the chemistry of viruses and bacteria.

—Dr. Henry Tauber, F.A.I.C.

The Chemistry and Technology of Waxes

(*New 2nd Edition.*) *By Albin H. Warth, F.A.I.C. Reinhold Publishing Corp.* 940 *pp.* 6¼x9¼". $18.00.

In the nine years which elapsed between the publication of the first edition of this authoritative treatise and this one, much improvement was made in the technology of wax production and application, due to extensive research. Therefore, those already familiar with what was long known as the "Wax Bible" will want this new version. The chapters describing the natural waxes are of special interest, since so much progress has been made, in the past ten years, in the study of these substances. We were happy to find large sections of the book devoted to the petroleum and synthetic waxes for which more and more uses are being found, particularly those containing polyethylene, an important contribution by the petrochemical industry. Nearly twice as much space as was given in the first edition has been alloted to industrial applications, and this chapter would, alone, justify purchase of this book.

—Dr. Frederick A. Hessel, F.A.I.C.

Free Radicals in Solution

By Cheves Walling. John Wiley & Sons, Inc. 632 *pp.* 6¼x9¼". $14.50.

Prof. Walling brings to this well-presented text his experience as research chemist for Du Pont and for U. S. Rubber; as technical aide for the Office of Scientific Research; chief supervisor of organic research with Lever Brothers, and years of teaching at Columbia University. This combination of research and academic experience is valuable for the presentation of this complex subject. Dr. Walling's approach is lucid and fresh. Not only students, for whom this is an unusually understandable text, but many a research chemist, who will find here

impetus to further investigations, will be grateful to Dr. Walling for valuable additions to the literature on free radical chemistry.

—Dr. Frederick A. Hessel, F.A.I.C.

The Lipids: Their Chemistry and Biochemistry

(*Oxidation, Metabolism and Nutritional Value.*) *By H. J. Deuel, Jr. Interscience Publishers, Inc. N. Y.* 1957. 1065 *pp.* $25.00.

The present last volume of this series covers the following: digestion; absorption; transport; storage; biosynthesis of lipids; metabolism of fats, fatty acids and glycerol; conversion of fats to carbohydrates; metabolism of phospholipids and their hydrolysis products; role of acetic acid, formic acid and propionic acid in fat metabolism; metabolism of branched-chain acids and related compounds; metabolism of sterols; nutritional values of vitamins, essential fatty acids; nutritional values of fats; sources of lipids and many subjects that concern the biochemistry of lipids and related compounds. There is a well-selected bibliography, an author index, and an extensive subject index. The three volumes are truly comprehensive and a major contribution to lipid chemistry and lipid biochemistry.

—Dr. Henry Tauber, F.A.I.C.

Chemical Books Abroad

By Dr. Rudolph Seiden, F.A.I.C.

Wilkens-Verlag, Hannover: *Diaetvorschriften fuer Zuckerkranke,* by E. Wirz-Koech; 1957, 62 pp.; paperbound DM 2.80.—A compilation of diets for diabetics. • *Herz, Arterien, Angina pectoris, Blutdruck, Neurosen,* by E. Kroschinski; 26th ed., 78 pp.; paperbound DM 3.20.—Deals with heart conditions and their treatment with vitamins, hormones, and one's own blood.

Hippokrates-Verlag, Stuttgart: *Makrobiotik,* by Ch. W. Hufeland; 1958, 294 pp.; DM 14.80.—Hufeland (1762-1836) was a famous physician before he wrote his book on preventive therapy, entitled (in translation) "Macrobiotic, or The Art to Prolong the Human Life" which has now been published in this revised (shortened) edition. • *Heilerde,* by H. Jung; 88 pp., 1957; paperbound DM 10.60.—A review of earths possessing healing qualities.

Bergakademie, Freiberg: *Lehrbriefe fuer das Fernstudium* — i.e., correspondence courses written by the professors of the mining college at Freiburg. They deal with a variety of subjects; each course of instruction, available in paperbound parts of approx. 64 pp., includes helpful illustrations, tables, problems and their solutions. Among the courses are: *Chemische Technologie* by A. Lissner and E. Krueger (8 parts, DM 16.—); *Teer und Erdoelverarbeitung* (tar and mineral oil production), by A. Dierichs and F. Ludwig (5 of 6 parts, each DM 2.—); *Chemie der Kohle* (chemistry of coal), by A. Dierichs and F. Ludwig (9 parts, DM 18.—); *Organische Chemie,* by A. Dierichs and F. Ludwig (8 parts, DM 16.—); and *Anorganische Chemie,* by A. Lissner, and W. Koch (8 parts, DM 16.—). • *Glashuettenkunde,* by P. Beyersdorfer and F. Krueger; 1956, 254 pp. (48 ill.); DM 9.— This book discusses glass—its raw materials, manufacture, properties, and uses. The coverage is extraordinarily complete.

Friedr. Vieweg & Sohn, Braunschweig: *Physik im Wandel meiner Zeit.* By M. Born; 1957, 259 pp. DM 19.50—(An English translation has been published under the title, "Physics in My Generation," by the Pergamon Press, London. 40 sh.) Born in Germany in 1884, this great physicist emigrated in 1933 to England where he lived till 1954, when he received the Nobel prize. Max Born republishes 20 of his articles and lectures in this book, thus giving the reader an easily understandable survey of the changes that took place in the field of physics and its philosophical background since 1921.

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Dr. Francis Joseph Weiss, F.A.I.C., consultant, 1541 No. Edgewood St., Arlington 1, Va., has just returned from Puerto Rico, where, upon invitation of the Secretary of Agriculture & Commerce of the Commonwealth of Puerto Rico, he carried out investigations in the field of agricultural chemicals and economics, especially related to the use of coffee and tropical fruits. He believes that chemists and chemical engineers could make better contributions to the improvement of living standards and relations between Latin America and the U. S. than diplomats and politicians. By using more fertilizers and agricultural chemicals, food production could be increased, 100%, which would eliminate near-famine conditions in certain areas. An article he published on this subject in C & EN recently has been reprinted in the *Congressional Record* of Aug. 12, 1958.

L. A. Rauch, F.A.I.C., has been elected president of Schaar & Company, 7300 W. Montrose Ave., Chicago, Ill. He has been associated with the company for over twenty-four years.

Charles Lighthipe, F.A.I.C., was recently appointed as technical director of the Industrial Laboratories of Nopco Chemical Co., Harrison, N. J.

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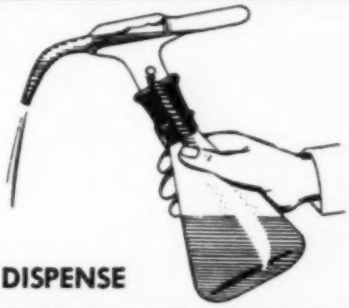

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